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NOVA SCHOOL OF BUSINESS AND ECONOMICS

DIGITAL FOR DEVELOPMENT (D4D): AN OPPORTUNITY FOR THE BELGIAN DEVELOPMENT COOPERATION, FOCUS ON E-GOVERNMENT

CONFIDENTIAL

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FIGURE 1 PARTNER COUNTRIES TO THE BELGIAN DEVELOPMENT COOPERATION (WORLD ATLAS, S.D.)

Benin, Burkina Faso, Burundi, the Democratic Republic of Congo, Guinea, Mali, Morocco, Mozambique, Niger,
the Palestinian Territories, Rwanda Senegal, Tanzania, Uganda

Foreword

Acknowledgements

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Disclaimer

The present document is an abridgement of a longer version of this thesis, in line with the requirements of the Nova School of Business and Economics. Furthermore, considering the limitations in time to conduct the study and the impossibility for the author to visit the different partner countries, this document relies solely on research and interviews. The extent to which the mentioned government policies and strategies have already been implemented or the trustworthiness of intentions towards the future are therefore unclear and further investigation is needed in that regard.

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1. Introduction

1.1 Context

On October 11 2014, Alexander De Croo was appointed minister of both Development Cooperation and of the Digital Agenda in Belgium's new federal government, Michel-I. The ministerial cabinet decided to see this unusual combination of mandates as an opportunity to look for potential synergies. Although this combination of mandates is unusual, it does make sense in practice. Digital technologies have allowed developing countries to skip some important steps in their development process. The term used in the domain of development economics to refer to this phenomenon is *leapfrogging*. The cabinet is currently working with the Ministry of Foreign Affairs on a new strategy, referred to as the Digital for Development (D4D) strategy, which aims to add a digital component to the interventions of the Belgian development cooperation efforts. On June the 8th, the Directorate General for Development Cooperation and Humanitarian aid presented a first draft of the strategic policy note. To better understand the context in which this new strategy is taking shape, it is relevant to understand the wider reform of the Belgian Development Cooperation initiated by Minister De Croo.

Due to significant cuts to the development cooperation budget in recent years, there has been a need to use resources more efficiently and to make sound strategic decisions regarding their allocation. The reform called for a concentration of the cooperation effort and a first decision was to limit the number of partner countries from eighteen to fourteen. The countries were selected *"on the basis of their degree of poverty, aspects of good governance and Belgium's potential for providing meaningful support"* (Ministry Foreign Affairs, Foreign Trade and Development Cooperation, s.d.). The remaining countries are Benin, Burkina Faso, Burundi, the Democratic Republic of Congo, Guinea, Mali, Morocco, Mozambique, Mali, Niger, the Palestinian Territories, Senegal, Tanzania and Uganda.

A second decision was to limit the scope of action. At the end of the last legislature, the Belgian Development Cooperation (BDC) was financing 206 organizations in 101 countries. This spread of activity led to inefficiencies. As such, two of the goals of the reform of the BDC were a better follow-up of the different initiatives, and a reduction of administrative costs. The new cabinet identified four thematic clusters to focus cooperation efforts on : (1) Human and Social Development, (2) the Environment, the Climate and Natural Resources, (3) Societal Consolidation and finally, (4) Humanitarian Aid and Resilience (Exposé d'orientation politique, 2014). The Ministry wants to rely on the expertise and participation of the most qualified actors within the Belgian public and private sector to create the most added value. A central role is given to results, transparency and responsibility to ensure efficiency.

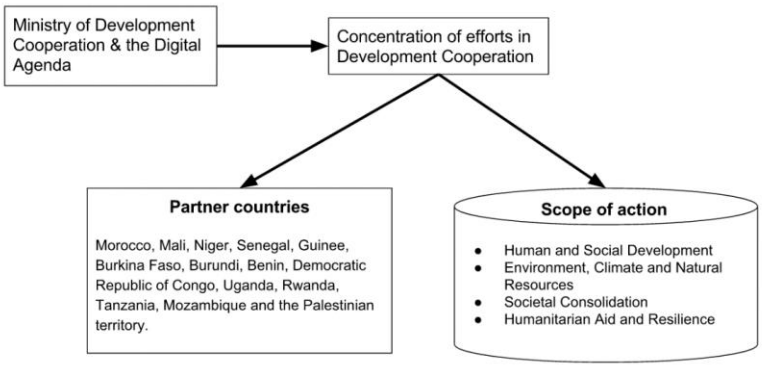

FIGURE 2 REFORM OF THE BELGIAN DEVELOPMENT COOPERATION (AUTHOR, 2016)

Digital technologies can be applied to various domains and the possibilities for development interventions are numerous. The domains of intervention presented in this document are the following: Health, Education, Agriculture, Finance, Governance and Social inclusion and empowerment.

Driven by the need to concentrate efforts, the Ministry of Development Cooperation wants to narrow down the focus of the cooperation efforts to one or two domains of intervention (Dubuisson, 2016).

The first draft of the strategic policy note on Digital for Development (D4D) of June the 8th recognises the strong potential of data and digital technologies and identifies two priorities to focus cooperation efforts on, which are **'better use of (big) data'** and **'digital for inclusion'** (Strategic Policy note, 2016). Additionally, the note encourages the Belgian development cooperation to adopt a collaborative and inclusive approach by working jointly with its partners towards common D4D-priorities to achieve a significant and sustainable impact. This desire for a more collaborative and inclusive approach has also been expressed by the cabinet itself (Dubuisson, 2016). Not only the fourteen partner countries are considered as partners to the BDC, but also multilateral partner organisations, humanitarian organisations, private sector companies and other European countries. At the Belgian level, the strategic note (2016) encourages the development of a Belgian *D4D ecosystem* bringing together all Belgian actors interested in D4D for increased cooperation, knowledge sharing and efficiency.

1.2 Objective and method

It is within this context that the present thesis falls. The purpose of the thesis is to analyse the possibilities for development cooperation efforts focused on the use of digital technologies in the domain of governance and to make some reasoned recommendations for intervention. Note that the present document is an abridgement of a longer version of the thesis. The research question of the thesis is the following:

How can Belgium help its partner countries develop their e-Government, given its expertise in Information and Communication Technologies?

E-Government is the term used to refer to the use by government agencies of information and communication technologies (ICTs). To reach this objective, it is first and foremost necessary to have a good overview of the potential of digital technologies and their different domains of application. By pursuing with a literature review on development cooperation, an approach to e-Government development cooperation can be defined.

An important element that comes out of the literature is the importance of having a good understanding of the local context of the partner country. Here, the PESTEL framework has been used to provide an in-depth overview of the local context present within each partner country of the BDC. The PESTEL framework is used *"to identify how future issues in the political, economic, social, technological and environmental ('green') and legal environments might affect organisations"* (Johnson et al., 2011, p.49). Based on this analysis, one can identify *key drivers of change,* which can serve as tools to construct scenarios of alternative possible futures. The analyses for each country do not include a description of the environmental and legal environment, given that these are less relevant to the project. Information on the legal and regulatory environment of a country's ICT sector has been included in the section on the technological environment.

Based on a good understanding of the local context of each partner country and a reasoned approach to e-Government development cooperation, a set of recommendations are made. First for each country in particular, then for the project in general.

1.3 Structure

The first part of the thesis presents the potential of digital technologies. Before presenting six different domains of application (section 3), section two focuses on the potential of (Big) data. The potential of (Big) data is illustrated in several domains of application. Given the purpose of the thesis, the focus quickly turns towards the potential for developing and emerging countries and towards e-Government. Section 4 presents the main challenges and barriers of e-Government.

Part two proceeds by presenting a reasoned approach to e-Government development cooperation. To do so, a scope of intervention is defined (Section 5) and a literature review presents the lessons learned from past experiences (Section 6). These lessons, along with the challenges and barriers of e-Government lay the foundations of a reasoned approach to e-Government development cooperation (Section 7).

After a theoretical part that addresses the topic in a general way, the following sections are more practical and focus on the case of Belgium and its fourteen partner countries. In part three, Belgium's digital know-how and experience is portrayed. First, the focus is set on e-Government and on the main actor in the development of e-Government in Belgium. Then a number of potential partners for development cooperation efforts are presented briefly.

Part four then proceeds with an overview analysis of the main challenges present within the fourteen partner countries. The identified challenges are based on a country profile of each one of the fourteen partner countries, which is not included in the present document. As mentioned in the previous section (Section 1.2), the country profiles are based on the PEST(EL) framework to describe the political, economic, social and

technological context of the country. The profiles also outline the state of e-Government as well as the government's efforts to develop it.

The final part of the thesis consists in a series of recommendations for Belgian e-Government development cooperation efforts. First, recommendations are made on how to address the most recurring challenges of the partner countries, then a number of recommendations are made for the project in general.

To conclude, a final review summarizes the main outcome of this research as well as its limitations.

PART 1: THE POTENTIAL OF DIGITAL TECHNOLOGIES

The new technologies allow us to collect store, analyse and share information digitally and this, to a much greater extent and at significantly lower costs than before (World Bank Group, World Development Report, 2016). They have a transformative potential through the significant economic and social impact they can have on society (World Economic Forum [WEF], Global Information Technology Report, 2015). The World Development Report (2016) divides the benefits of digital technologies, or digital dividends, into three broad categories: inclusion, efficiency and innovation.

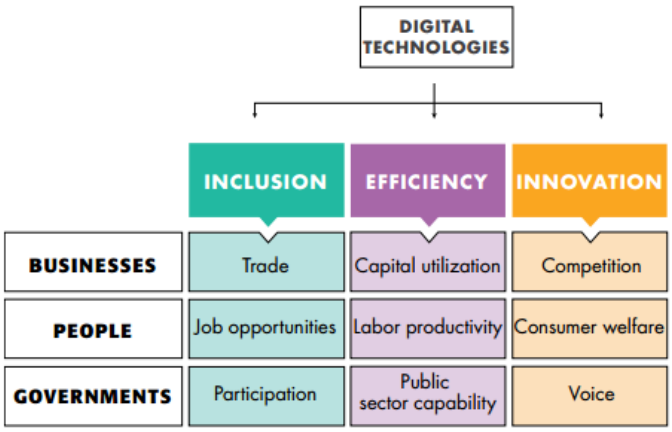

FIGURE 3 DIGITAL DIVIDENDS FOR BUSINESSES, PEOPLE AND GOVERNMENTS (WORLD DEVELOPMENT REPORT, 2016, P.12)

Through the Internet, businesses have access to the world economy, thereby expanding trade opportunities, intensifying competition and ultimately fostering innovation. The Internet contributes to direct and indirect job creation and allows for the automation of routine, repetitive tasks. This can significantly reduce the costs of performing such tasks and can increase efficiency. Workers can focus on tasks that require human judgment and can access information in a cheap and quick way. Moreover, digital technologies and innovations have enhanced consumer welfare, through innovations in health, education, retail and access to information, among

others. As for governments, they have started using digital technologies to improve public sector capabilities, give a voice to the population and increase participation.

For some developing countries, the use of digital technologies has led to the development of *leapfrog technologies*. *To leapfrog*, as defined by the Cambridge dictionary, means "*to improve your position by going past other people quickly or by missing out some stages*" (Cambridge Dictionary, s.d). The term is often used in the domains of economics and business and also more recently as a theory of development in the context of sustainable development for developing countries. Examples of such technologies are presented in the following sections (Section 2 & Section 3). Note that leapfrog technologies are also a source of knowledge for developed countries. Existing structures and procedures and a strong resistance to change tend to discourage developed countries to look for innovative solutions to improve these structures and procedures. Instead, they adopt the leapfrog technologies developed in developing and emerging countries once their potential has been confirmed and proven (Dubuisson, 2016).

In the following sections, different opportunities and domains of application for new digital technologies are presented. First, the paper discusses the potential of making better use of data. The paper then proceeds by discussing six domains of applications for the new digital technologies. These domains were chosen based on their relevance for this project.

2. The potential of (Big) data

Given the world's increasing capacity to compute technological information and store capacities (Mishra, 2015), companies and states are paying more and more attention to *Big Data*. The term 'Big Data' is widely used, although there is currently no consensus on its definition. A definition that is often cited is the one from consulting firm McKinsey, which defines Big Data as *"datasets whose size is beyond the ability of typical database software tools to capture, store, manage, and analyse"* (Press, 2014). New software tools and techniques are emerging from the fields of statistics, computer science, applied mathematics and economics to analyse this data and produce meaningful and extremely accurate information (McKinsey Global Institute, 2011). In parallel to this, processes are increasingly digitalised to generate new sources of data. Data ecosystems now allow information captured from different sources to connect with each other to create value (McKinsey Global Institute, 2011, World Economic Forum [WEF], 2012). In developing countries, mobile telephony is an important source of data because of its high penetration rates and its applications in various domains (section 3). Moreover, mobile telephony has the advantage of making it easier to link the generated data to the individual and his or her location (WEF, 2012).

Big Data allows data to become more transparent and usable at a higher frequency, it allows for more accurate and detailed performance monitoring and impact assessment and leads to better decision-making (McKinsey, 2011; WEF, 2011). Furthermore, data can be used to better understand customers and to develop a product or service that responds to the needs of a specific segment of the market (McKinsey, 2011). Finally, data are used to anticipate future needs. A commonly used example is one from the automotive industry, where sensor technology is increasingly used to foresee the need for maintenance repairs. Big Data represents a great

potential for development actors as well. The use of data is relevant for the design, assessment and improvement of development and humanitarian interventions (Strategic Policy note, 2016).

Public sectors across the world are increasingly seeing the potential of making such information available to the public and encourage their private sectors to do the same (United Nations [UN], E-Government Development Report [EGDR], 2014). The phenomenon has been referred to as *Open Data*. The data that is made accessible can vary in nature (primary, aggregated, complete, timely) and format (unstructured vs. using open standards to allow others to easily reuse the data, language used) and accessibility (cost and procedure involved, permissions needed) (Strategic policy note, 2016). The purpose of making data feely accessible to the public is on the one hand, to allow for better decision-making, more transparency and to generate innovative ideas (Third International Open Data conference, 2015) and on the other hand, to encourage users to validate and improve the quality of the data. Local communities can act both as providers and users of information.

3. Domains of application

3.1 Health sector

The use of digital technologies in the health sector is a phenomenon that is not new and that is referred to as *E-Health*. As defined by the World Bank, *"E-health encompasses the full range of uses of information and communication technologies (ICTs)—from traditional administrative reporting systems to broader Health Management Information Systems (HMIS) to telemedicine, electronic medical records, clinical decision support, and patient portals—and a full range of technologies, including internet and mobile applications."* (World Bank [WB], World Development Report [WDR], 2016, p.190).

The use of mobile applications to provide health-related services is being referred to as m-health ('m' for mobile). The World Health Organization (WHO) reports that in 2011, 93 of the 112 health systems in the countries it surveyed used some form of e-health or m-health (mobile-phone based) approach (WB, WDR, 2016). The most important impact of e-health and m-health approaches comes from their ability to use and exchange (health care and administrative) data and to create human networks of competence and expertise (ITU, 2008). This is particularly important in developing countries, where a large part of the population still lives in rural areas and where human capacity for medical services is limited (WB, WDR, 2016). By improving the flow of information between patients and health care providers or between health care providers themselves, ICTs allow a very small number of qualified people to significantly expand their reach (WB, WDR, 2016). E-health solutions, although costly to implement, can have a very wide-reaching impact and bring significant cost savings, as evidence suggests (WB, WDR, 2016). Savings emerge mainly from the fact one system can often be used to address not one, but a number of health system problems and can serve different purposes. Furthermore, the data generated by e-health and m-health solutions can be used to enhance the accountability and transparency of health care systems (World Bank Group, World Development Report, 2016).

3.2 Education

Research shows that the use of digital technologies to improve the quality and availability of education (*e-learning*) is not as simple as setting up 10 computers in a classroom (WEF, Global Information Technology Report, 2015). For a long time, e-learning initiatives in developing countries focused on providing direct access to information and communication technologies. The underlying idea being that a computer could provide every child access to a better education, even when the teacher is absent. Furthermore, ICT equipment is increasingly affordable and it can be used even in the most remote areas. However in 2005, the World Bank evaluated the efficacy of classroom ICTs and concluded that the use of ICTs in education has not yet proven to have a positive impact (WEF, Global Information Technology Report, 2015). Initiatives such as MOOC ("massive open online course") courses and the One Laptop Per Child (OLPC) project have not yet shown any significant result. The World Economic Forum explains this by pointing out what all these projects have in common: they neglect the role of the teacher (WEF, Global Information Technology Report, 2015), the central person in the education and learning experience of a child.

Although the impact of teacher quality is difficult to measure and evaluate, research seems to demonstrate the significant impact high-quality teachers have on educational outcomes. Gradually, a new approach to e-learning is emerging and major reports such as the World Development Report (2016) and the Global Information Technology Report (2015) are setting the trend, suggesting an approach more focused on improving the quality of teachers. The World Economic Forum encourages in its report the use of ICTs for teacher capacity development. The World Bank recognises the need for e-learning initiatives to be more adapted to and have a better understanding of the local education challenge and context (WB, WDR, 2016). Digital technologies can improve the quality of education by providing teaching material and training. In developing countries, SMS technology has already been used to orient, train and motivate teachers (WB, WDR, 2016). Furthermore, better monitoring of schools and teachers has the potential to reduce corruption and teacher absenteeism. This is particularly relevant for some African countries where the rate of teacher absenteeism can reach 30% (Patrinos, 2013).

3.3 Agriculture

The exchange of knowledge among farmers is an important aspect of the agricultural activity. In that regard, mobile phones and the Internet have the potential to significantly contribute to productivity improvements in the rural sector (Deichmann, Goyal & Mishra, 2016). By facilitating this sharing of information, Information and Communication Technologies impact three areas of the agricultural activity.

First of all, farmers can use these technologies to exchange information on changing weather conditions and market prices. Timely and precise information on market prices improves market transparency and reduces information asymmetries between farmers and market intermediaries. Secondly, ICTs help providing farmers with timely and precise information on inputs, agricultural practices, tools, new seeds and so on. Such information can significantly increase on-farm productivity (Deichmann et al., 2016). Finally, Information and Communication Technologies enable efficient logistics along the agricultural production chain.

Quantitative research on the impact of digital innovations on the lives or rural people is growing at a slow but steady pace. Studies show good results, however there is also evidence that innovations often fail to scale-up and achieve wider acceptance. Furthermore, evidence shows that farmers are not always able to act on the information they receive because of "inaccessibility of alternative markets and complex interlinked relationships between buyers and sellers in poor developing economies" (Deichmann et al., 2016, p.24). This raises questions on the actual benefit of enhancing farmers' access to information and encourages development agents to develop a good understanding of the underlying institutional environment and constraints (Deichmann et al., 2016).

3.4 Financial inclusion

Up until 2007, the main channel to access formal financial services in developing countries was through banks. However, a large share of the population was financially excluded and mainly relied on informal financial services (Andrianaivo & Kpodar, 2011). Although the propensity to save in these regions is high, the number of loans and deposits allocated is relatively low (Andrianaivo & Kpodar, 2011).

However in that same year, the leading cell phone company in Kenya, Safaricom, launched M-PESA, an SMS-base money transfer system that allow individuals to use their cell phone to perform financial interactions such as deposit, send and withdraw funds (Jack & Suri, 2010). By allowing people to deposit, send and withdraw money using their cell phones, mobile money plays the part formal banks traditionally play. The advantages mobile money offers are numerous. First of all and as explained previously, it facilitates trade and makes it easier for people to make financial transactions. Financial transactions can take place in a more efficient, faster and more secure way and people no longer need to carry around large amounts of cash (Jack & Suri, 2010). Secondly, the service provides individuals with a safe storage mechanism which positively impacts household savings. Thirdly, mobile money has significantly facilitated the sending of remittances across the territory. As a result, households better allocate human capital and physical investments and have greater control on the way remittances are spent. GSMA reports that mobile money services offering the possibility to send remittances across borders, saw the volume of cross-border remittances increase by 52% in 2015 (GSMA, 2015). Note that cross-border transactions were the fastest growing product in 2015.

Mobile money services have impacted other sectors of the economy such as the agricultural sector and has streamlined public sector service delivery (World Bank Group, World Development Report, 2016). The public sector makes use of the services to allocate subsidies directly to recipients, which has allowed it to significantly increase its reach while also lowering costs (World Bank Group, World Development Report, 2016). Absolute financial inclusion has not yet been reached, but mobile financial services have been successful in reducing the financial infrastructure gap and the lack of access to financial services, especially for women (United Nations Capital Development Fund, 2015).

3.5 Governance

Digital technologies are increasingly used by public administrations and the phenomenon is referred to with the term *e-Government*. There exists a variety of definitions for the concept of e-Government. The World Bank

provides the following definition: *"E-Government refers to the use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and/or cost reductions."* (World Bank Group, 2015). This definition highlights the fact that e-**G**overnment is not simply about introducing information and communication technologies to increase efficiency and reduce costs within the administration, but that it can have further-reaching benefits. E-Government initiatives tend to be part of a broader reform to improve public sector performance and they often require a complete restructuring and transformation of long entrenched processes through which public services are generated and delivered. Not only governments, but also businesses and citizens benefit from the adoption of e-Government practices. Citizens benefit from these improvements in the interaction with its administration (World Bank Group, 2004). By setting into place automated processes, the need for face-to-face interaction is eliminated, reducing the risk of corruption and increasing transparency. Note that it is often the poor that bear the largest costs of administrative inefficiencies and corruption. Additional benefits for citizens are presented in the following section on social inclusion and empowerment (Section 3.6). For businesses, e-Government practices can eliminate some administrative roadblocks in the interaction with the government through more transparent and consistent rules, faster processes and lower transaction costs.

The United Nations identify four stages of online service development (UN, EGDS, 2014). At the first stage, *emerging information services* provide citizens and businesses with information on public policy, governance, regulation, and etcetera. In other words, all information related to the State that might be of interest to citizens and businesses. At the second stage, *enhanced information services* are provided. Government websites still primarily engage in one-way communication, but some simple two-way communication between government and citizen is possible. At this stage for example, citizens are able to download forms. When more two-way communication possibilities are offered, the government reaches the third stage of *transactional services*. At this stage, governments invite citizens to give input and to participate in the formulation of government policies, regulations, etc. This requires the citizen to identify himself online, usually using his electronic identity card. At this stage, citizens are also able to file taxes online and apply for licences, permits, etc. Finally, at the fourth stage governments provide *connected services* to citizens. At this stage, the government uses Web 2.0 and other interactive tools to enable valuable two-way communication with citizens to take place. Citizens are involved in the decision-making process and communication is entirely citizen-centric.

The government itself also benefits from the introduction of e-Government practices within its organization. By automating certain processes, the government can either cut staff or better give more productive tasks to its employees. The process of simplifying processes and reducing steps and the number of necessary employees is called *reengineering*. This can have a significant impact in countries where human capital in the ICT sector is

limited. E-Government processes allow for more frequent and accurate data sharing across departments, as well as for a more consistent saving of historical data. This data can then be used for data analysis. Productivity can be increased thanks to a closer monitoring of employee productivity and the more transparent processes allow for a fast identification of certain forms of corruption.

3.6 Social inclusion and empowerment

The literature seems to suggest that ICTs can foster social inclusion and empowerment both in a direct and indirect way. The above-mentioned example of mobile finance for example (Section 3.4), directly empowers women by giving them more financial independence. By strengthening decentralised governance (Section 3.5), ICTs indirectly favour social inclusion.

In the last decade, a large number of developing countries has taken measures towards decentralization and the policy- and decision-making power of local governments is increasing (UN, 2004). The reason for this trend is that decentralisation contributes to development. Local communities and governments are in a better position to make decisions and to formulate solutions adapted to the particular needs of the local community. Furthermore, a well-defined decentralisation plan can lead to increased democratic participation, justice, human rights, active citizenship, participation of women and youth in the public sphere and multi-level accountability (European Commission, 2013). Innovations in Information and Communication Technologies have fuelled the decentralization process by facilitating communication and information sharing, improving the interaction between governments and citizens and by improving service delivery, among other things (UN, 2005a).

According to the World Bank, close to 2.4 billion people in the world currently do not have a birth certificate (or other official document) allowing them to prove who they are (World Bank, World Development Report, 2016, p.158). This excludes them for a large number of services such as opening a bank account, registering property or receiving public transfers. Furthermore, "*lack of identity is an impediment for poor people to exercise their basic democratic and human rights*." (World Bank, World Development Report, 2016, p.17). Information and Communication Technologies (ICT) provide governments with tools to set up an accurate and up-to-date national register and to lay the foundations of social inclusion and human rights in their country (Strategic Policy note, 2016). By linking the national register to the national identity systems, citizens are given an identity card to prove their identity and to exercise their democratic and human rights. Furthermore, their identity card gives them access to the various public and private services they might have been excluded from before (WB, WDR, 2016, p.16). The World Bank encourages countries to focus on these foundations as a first step towards more accountable institutions (WB, WDR, 2016).

The latest technologies use biometric data to create 'smart' identification documents. These *digital IDs* provide a lot of valuable information that can be used to monitor the attendance of civil servants, to identify recipients of government subsidies or to increase electoral accountability and participation by enabling citizens to monitor the voting processes and report electoral violence incidents (World Bank, World Development Report, 2016, p.17).

Information and Communication Technologies (ICT) are also contributing to social inclusion and empowerment by providing governments with a new set of tools to reach out to and interact with their citizens and communities (United Nations [UN], e-Government Development Survey [EGDS], 2014). Social media, crowdsourcing and mobile technology can be used as channels for citizens to participate in governance and in the development and delivery of public services (UN, EGDS, 2014). This process of engaging citizens through ICTs and to allow for direct interaction between the public sector and citizens is called *e-Participation*. There is a growing consensus that a constructive dialogue between local governments and civil society is often the most cost-effective medium to evaluate the needs of a particular community for its further development (UN, 2005a). Open Data plays an important role in this process, because it provides citizens with the necessary information to participate in the decision-making process (UN, EDGS, 2014, p.89). When done properly, e-Participation creates more participatory, inclusive, collaborative and deliberative public administrations (UN, EGDI, 2014, p.16).

ICTs can be very effective tools for the promotion of gender equality and the political and social empowerment of women (UN, 2005b). Information and Communication Technologies have been used, for example, as tools to report domestic violence, to empower self-help groups and to increase female leadership (Wamala, 2012). By making sure women entrepreneurs have access to these technologies, initiatives are also able to stimulate women entrepreneurship (UN, 2005b).

4. Challenges & barriers of e-Government

Since the purpose of this thesis is to discuss the potential of cooperation efforts in e-Government, the present section aims to identify the main challenges and barriers to the development and implementation of successful e-Government projects. The following factors have been identified from the literature as the main challenges and barriers: lack of ICT infrastructure, lack of financial, skilled human and physical resources, security, privacy and trust issues and finally, lack of e-Integration. Having a good understanding of these barriers and how to tackle them, will help define an approach to development cooperation in the following section.

4.1 ICT infrastructure

A National ICT infrastructure is often referred to with the term backbone infrastructure or *national backbone*. Calandro Mpho Moyo (2012) defines backbone infrastructure as *"a portion of a telecommunications infrastructure providing communications services to other parts of the network."* (Calandro Mpho Moyo, 2012). It is typically made up of various types of technology such as copper, fibre-optic cable, co-axial cable and digital microwave.

ICT infrastructure is recognised as one of the main challenges of e-Government (Ndou, 2004; Rana, Dwivedi & Williams, 2013; Dada, 2006). It is a basic requirement to ensure connectivity across a country's territory, but its roll out requires long-term and costly investments with important sunk costs (Calandro Mpho Moyo, 2012; WEF, Global Information Technology Report, 2015). Low levels of Internet penetration and poor quality

broadband limit access to e-Government services (Zhao, Scavarda & Waxin, 2012). Due to the limited state resources for investments in public utilities and the high risks associated with infrastructure investments, many developing countries have opted to liberalise markets in the ICT sector (such as the telecom market), passing on the risk of investment to the private sector. This has successfully led to a major expansion of mobile telephony.

However new technological innovations such as 3G wireless technology and high-speed Internet require higher levels of backbone capacity. Further investments in infrastructure are needed, but the lack of competition on telecom markets often discourages new entry or new investments (Ndou, 2004; Calandro Mpho Moyo, 2012). As a result, governments feel the need to play a leading role in the process by creating incentives for the private sector. They do so by creating a regulatory environment that fosters competition and by enabling public-private partnerships (PPP) to take place.

4.2 Resources

Other important barriers to e-Government are the lack of financial resources as well as human and physical resources for e-government deployment (Zhao et al., 2012).

Human Capital is one of the three pillars of the United Nations' E-Government Development Index (EGDI) because of the strong correlation that exists between education and literacy on the one hand and with the ability to use technology on the other (UN, EGDS, 2014). In its report, the UN identifies education as one of the most important determinants of Internet usage. Given that *Online Services*, as suggested by the term, are provided through the Internet, not only does a lack of Internet access but also a lack of education prevent individuals from using these services without a need for assistance. The World Bank (2016) encourages emerging countries to ensure not only basic, but also digital literacy among the population to reap the full benefits of digital technologies (World Bank, World Development Report, 2016). Reaching adults can be a particular challenge in that regard, especially in low-literacy environments. Adults are often less aware of the potential of digital technologies so there is a need to raise their awareness before teaching them how to use the technology.

Although the Human Capital index of the EGDI does not look at the presence (or lack of presence) of ICT skills in the public sector, it is one of the major challenges of e-Government initiatives (Ndou, 2004). Moreover, it is particularly a problem in developing countries (UNPA&ASPA, 2001, cited by Ndou, 2004). The human capacities needed for the successful implementation of an e-Government project are not limited to technical skills for the design, installation and maintenance of the ICT infrastructure (Lam, 2005). Commercial and management skills are also needed to use and manage online processes, while important human capital resources are needed to focus on staff training and change management (Section 4.4) (Ndou, 2004).

Ndou (2004) encourages public sectors to rely on their private sector for the provision of resources it may lack by adopting a more collaborative approach at the local, regional and national level. Through a stronger collaboration between the public and the private sector, private sector companies can provide the government

with the technical skills and infrastructure that it misses, while universities contribute by forming the future engineers and managers and by providing training courses to government staff and citizens (Ndou, 2004). The public sector, for its part, has to support the private sector in its activities. For a strong and mutually-beneficial relationship to take shape, it is important to build trust. The importance of trust has also been expressed by Ronny Depoortere, Regional Director of People ID at Zetes (Section 9.1).

4.3 Security, privacy and trust

The literature largely agrees on the fact that cyber-security and privacy concerns can be important barriers to e-Government adoption (Rana et al., 2013; Ndou., 2004; Lam, 2005). Addressing these concerns is crucial to create trust and confidence between the users and the government (Lam, 2005).

The introduction of new technologies and Internet trends such as electronic signatures, electronic payments, computer crime and copyright issues require the legislation to adapt or adopt new laws and policies (Ndou, 2004). If societies want to make better use of Big Data by encouraging the sharing of data between government agencies for example, it is important that the legislation and regulatory environment ensure the privacy of the shared data. Processes need to be secure, controlled and transparent (Lam, 2005). Privacy and security concerns are particularly sensitive regarding e-health initiatives because they deal with personal data (World Bank group, World Development Report, 2016; WEF, 2011). The way public infrastructure is designed is also key to guarantee security and privacy of transactions (Ndou, 2004). As information is increasingly being shared, an important question is the one of data ownership. Policies are needed to define access rights to data (Lam, 2005).

Creating trust can particularly be a challenge for countries with a history of dictatorship, political instability or corruption. For e-Government efforts to be successful, it is important to make sure the citizens and private sector start seeing their government as a partner they can trust. Note that the resistance can also come from the government itself, if it is resistant to more open and transparent systems and fears losing authority (Ndou, 2004).

4.4 Digital divide and resistance to change

The fact that the technology exists does not mean it is used by everyone. 3G technology for instance, is currently available in every partner country except for Niger (World Time Zone, 2016), but the Internet penetration rates in these countries show that the technology is not yet used by the whole population. In fact, in many developing countries there is a divide between the part of the population that has access to and uses digital technologies and those who don't. This divide is commonly referred to as the *digital divide*. The digital divide goes beyond mere connectivity issues (Dada, 2006). Inequalities in social, educational and cultural background, as well as in informational capital and economic resources can explain the differences in terms of usage between users and non-users (Zhao et al., 2012). According to Van Dijk and Hacker (2000), there are four types of barriers to access. First, some psychological reasons such as lack of interest and computer fear can discourage a person from using the new technologies. Secondly, access might be physically impossible because the person does not own the technology and no public places in his or her proximity provide access to

it. Thirdly, a lack of digital skills might prevent that person from using the technology (also mentioned by Rana et al., 2013). Finally, the person might not use the technology because of a lack of usage opportunities (Van Dijk & Hacker, 2000). Bridging the digital divide therefore requires to address each barrier.

Psychological resistance to the new technologies can also explain the low take up of e-Government solutions within certain public sectors. In fact, employee resistance to change is the biggest barrier to successful change within organisations (Ndou, 2004). Change management constitutes an important aspect of a successful e-Government project (Lam, 2005; Ndou, 2004; Zhao et al., 2012). This resistance can be explained by a lack of training, a fear of losing one's job, a preference for traditional methods of working and too little time spent on learning the new ones, among other factors. To address the issue, it is necessary to provide employees with incentives to adopt the new technology and to establish well-structured plans that follow employees throughout the process (Ndou, 2004). Moreover, a clear strategy supported by strong leadership is needed to overcome the barriers to change. This is the topic of the following section.

4.5 Strategy, vision & leadership

Many governments, especially in developing countries, limit their online presence to the provision of information to citizens and businesses. More enhanced, transactional or connected presence (UN, EGDR, 2014)[1] require sophisticated re-engineering processes. To reap the full benefits of such forms of presence, a strong e-Government strategy is needed with a holistic vision and focus on long-term objectives (Ndou, 2004). The development of an e-Government strategy requires a good understanding of the current situation (reality on the ground and inventory of projects) and a careful analysis of the costs, impact and benefits of every new project (Ndou, 2004). Moreover, the new vision needs to be supported at every level of the administration, especially at the highest political levels (Ndou, 2004; Rana et al., 2013). Without strong leadership and commitment new strategies or initiatives have little chances to materialise, especially when they include high costs, risks and challenges (as is usually the case with e-Government projects). Not only is it important to have a clear strategy on how to overcome barriers to change, leadership is needed to motivate, influence and support the project at every step of the process (UN, EGDR, 2014; Ndou, 2004). McClure (2001) recommends appointing a federal CIO to provide strong central leadership and to overcome the many challenges.

4.6 E-integration

Related to this idea of a holistic vision or architecture for the e-Government strategy is the challenge of e-Integration. E-Integration refers to the integration and interoperability of all e-Government systems (Lam, 2005; Zhao et al., 2012). The United Nations define interoperability in the public sector as *"the ability of government organizations to share and integrate information by using common standards"* (United Nations, E-Government Development Report, 2012). E-Integration is a problem for many organisations that introduce new systems and new standards without paying much attention to architecture interoperability (Lam, 2005).

[1] OSI I: emerging presence = basic information online
OSI II: enhanced presence = e-sources, e-services
OSI III: transactional presence = two-way interaction, financial and non-financial transactions
OSI IV: connected presence = WoG, full interoperability

Ensuring this interoperability can then be a challenging and costly process. When migrating to a new system, the organisation has to bear the sunk costs of the past system in addition to the costs of the new system and its implementation (UN, EGDR, 2012). A lack of relevant integration expertise is also an important barrier to e-Integration (Lam, 2005). The difficulty of ensuring e-Integration between a country's national register and identity systems is a concern that has been expressed by many government officials at the 2016 ID4Africa conference. It represents a challenge for many governments (World Bank, 2016).

PART 2: DEVELOPMENT COOPERATION EFFORTS

Now that the main barriers and challenges to e-Government have been discussed, the purpose of this section is to define an approach to development cooperation that will allow Belgium to effectively help its partner countries develop their e-Government. First, the scope of intervention needs to be defined (Section 5). Then, an overview of the literature and the history of development cooperation provides development agents with five core principles to ensure aid effectiveness (Section 6). Based on the sections five and six, an approach is then defined (Section 7).

5. Scope of intervention

The challenges and barriers to e-Government presented in section four can be seen under two different lights. On the one hand, addressing these challenges leads to the success of on-going and future projects. In other words, they become key success factors to the projects. On the other hand, they can be defined as *building blocks* on which every e-Government project is built. They are the foundations that delimit the possibilities and impact of projects and introducing more ambitious projects will at some point require governments to *strengthen* the building blocks. This view also implies that the possibilities in terms of e-Government are determined by the building blocks, which differ from one *local context* to the other.

Cooperation efforts can thus support a partner country by either helping it tackle the challenges it encounters in on-going projects or by helping it reinforce its e-Government building blocks to open up new opportunities.

6. Literature review on development cooperation and aid effectiveness

Many lessons have been learned from the experience and mistakes of past development cooperation efforts. While cooperation efforts in the 1950s and 1960s focused mainly on the transfer of technology to the Third World, this approach has had a limited impact on development. One of the reasons for this limited impact is that it completely ignored the importance of local knowledge, institutions and social capital in the process of economic and social development (United Nations Development Programme, 2002). In his renowned book "Small is Beautiful", the economist Ernst Friedrich Schumacher encourages development actors to look at the actual needs of local people and to offer "intermediate" technological solutions rather than selling them the Western myth of the "high-tech fix". In other words, development solutions should be adapted to the local

context. In his work, he also mentioned the importance of waiting to be invited to offer help because, as he puts it, *"if people do not want to better themselves, they are better left alone"* (Schumacher, 1973, cited by Sirolli, 1999, p.15).

In the last two decades, the focus of cooperation efforts slowly shifted to *technical assistance*. Technical assistance is based on the idea that developing countries lacked important skills and knowledge and that development cooperation efforts should focus on the transfer of this knowledge. However in the early stages of technical assistance, although some attention was given to capacity development it was done in an overly simplistic and optimistic way (United Nations Development Programme [UNDP], 2002). Technical assistance was successful in getting the job done, but efforts to transfer knowledge were not sustainable or effective. As mentioned in its report on Capacity for Development, the United Nations Development Board recognises that *"there have been positive micro-improvements, but not the kind of macro-impacts that build and sustain national capacity for development"* (UNDB, 2002, p.3).

These concerns over the effectiveness of technical assistance have generated a lot of questioning and efforts to improve the situation. This resulted in the 2005 Paris Declaration on Aid Effectiveness and the 2008 Accra Agenda for Action, defining five core principles to aid effectiveness; ownership, alignment, harmonisation, managing for results and finally, mutual accountability (OECD, 2005). The principles commit both donor and recipient and shape the relationship between them. Perhaps a short description of each principle is required, starting with the principle of ownership. Lack of ownership significantly undermines the effectiveness of technical cooperation. Therefore cooperation efforts should take place in the form of partnerships and policy dialogue, where donor and recipient are placed at the same level (UNDP, 2002). To eliminate any asymmetry in the donor-recipient relationship, the declaration limits the role of the donor to respecting the partner country's leadership and helping it strengthen its capacity to exercise it (OECD, 2005). The recipient needs to show political leadership in the development and implementation of its strategies and take the lead in co-ordinating aid at all levels. With the alignment principle, donors commit themselves to base their support on recipients' national development strategies and priorities. Furthermore, donors' actions should be transparent and collectively effective (harmonisation) and should focus on results (result-based management). Finally, both donors and recipients are responsible for development results and their relationship should be based on mutual respect and commitment (OECD, 2005). According to Gulrajani (2013), donors need to show domestic political commitment to become champions of aid effectiveness.

The Paris Declaration also recognises the importance of adapting the principles of harmonisation, alignment and managing for results to environments of weak governance and capacity in the recipient country. This comes down to a need for local adaptation (UNDB, 2002). Solutions that have worked in the West are not always appropriate in the South. The principle that has been widely adopted in that regard is to *"scan globally, reinvent locally"* (UNDB, 2002). Local adaptation requires a good understanding of the capabilities and potential of the local population, institutions and society as a whole..

7. Defining an approach to e-Government Development Cooperation

Based on the information presented in section four and six, the present section aims to define a reasoned approach to e-Government Development Cooperation.

An important principle should be for aid to always be driven by demand and to be aligned on the partner country's national development strategies and priorities. To do this, two things need to be done. First of all, one needs to reach out to the different government institutions for the development and implementation of e-Government initiatives in the country and to provide assistance if asked for. If that is the case, then a strategy can be defined with the partner country on how Belgium's efforts can be aligned to the recipient's national development strategies and priorities. This implies that solutions should be adapted to the local context. The scope of intervention is defined by the main challenges and barriers to e-Government. Cooperation efforts can support a partner country by either helping it tackle the challenges it encounters in on-going projects or by helping it reinforce its e-Government building blocks to open up new opportunities. This might include the following; help a partner country adapt its legislative and regulatory environment to deal with privacy and security issues, provide courses and training sessions to develop ICT skills and increase literacy levels among the population, help the government define an e-Government strategy and show leadership, help the administration deal with resistance to change and finally and advice administrations on e-Integration and interoperability. If cooperation efforts focus on the sharing of knowledge and on capacity-building, then attention should be given to the sustainability of such efforts. Training sessions should be long enough to be effective and the learning process should be monitored. This comes back to the principles of ownership and result-based management. Recipient countries should not become dependent on the donor country and progress should be monitored using well-defined assessment frameworks.

Finally, relying on the resources present within the private sector presents a great potential to e-Government development. This includes private companies, but also higher education institutions from both the donor and the recipient country. Public-private partnerships (PPP) are a way to call on this potential. For a strong, sustainable and mutually-beneficial relationship to take shape, trust needs to exist between the two countries, as well as within the context of the public-private partnership. All actions should be transparent and collectively effective (harmonisation) and all parties are mutually responsible for ensuring aid effectiveness (mutual accountability).

Part four of the thesis makes a first step towards this approach by identifying the main challenges faced by the fourteen partner countries. These challenges are identified based on an analysis of the local context of each partner country. However, before getting to that, part three focuses on Belgium's know-how and experience with e-Government and presents four potential partners from its private sector to work with.

PART 3: BELGIUM'S DIGITAL KNOW-HOW & EXPERIENCE

8. E-Government in Belgium

In terms of e-Government, Belgium is also a good performer at the European level. The country ranks 10th at the European level in terms of 'Digital Public Services' and it is important to note that it is a move up of three places compared to the 2015 score (13th). The main improvements were made regarding the use of Open Data, the completion of Online Services and the offer of pre-filled forms. However, despite improvements in the use of Open Data the country only ranks 16th for that category. Belgium ranks 22nd out of out of 92 countries in the 2015 Open Data Barometer, a collaborative research by the World Wide Web Foundation (Open Knowledge, 2016). With a score of 52.62 out of 100, Belgium is at the middle of the barometer. The barometer ranks countries based on three parameters; readiness, implementation and impact. In terms of implementation, Belgium has been improving steadily throughout the years. However its impact score has declined sharply from 2014 to 2015, while its readiness score has been fluctuating around 80. With its overall score, Belgium ranks behind neighbouring countries France, the Netherlands and Germany.

Belgium ranks 25th out of 193 states on the E-Government Development Index (United Nations, EGDS, 2014). As a reminder, this index is composed of three indexes assessing the development of the country's online services, technology infrastructure and human capital. In terms of online services, Belgium ranks very well, ahead of its regional and sub-regional average.

E-Government is one of the five priorities in the Ministry's Digital Belgium action plan. The main objective in terms of e-Government is to enable every citizen and business to do all interactions with the public administration online by 2020 (Ministère de l'Agenda Digital, s.d.).

The responsible instance for the definition and implementation of the federal e-Government strategy is the Fedict, the Belgian Federal Public Service for Information and Communication Technology (Fedict, s.d.). Overall, the Fedict provides integrated end-to-end e-government services as well as specific operational ICT services. The main responsibility of the Fedict is to assist the Federal public services in improving the delivery of their services to citizens, businesses and civil servants through the use of ICT technologies. The use of ICT technologies enables the administration to deliver fast, transparent, user-friendly, effective and reliable services. Additionally, the Fedict manages the selection and recruitment of ICT staff for the federal public institutions.

The Fedict focuses its activity on four programmes: the development of online applications, Data exchange, identification and security and finally, infrastructure. With the efforts made by the Fedict, Belgian citizens are already able to perform a wide range of services online. They can use the Internet to enter in contact with public authorities, to obtain information, but also to send filled-in forms and to download official documents (SPF Economie, P.M.E., Classes moyennes et Energie, 2015). Moreover, tax payers can use the Internet to fill in their tax declarations.

9. Potential partners

Before proceeding to the presentation of private companies *Zetes* and *Belgium Campus*, non-profit organisation *Close the Gap* and the *Flemish Interuniversity Council for University Development Cooperation* (VLIR-UO S), it is relevant to explain why precisely these four organisations were chosen. First of all, they are four companies pursuing very different goals but at the same time all of their activities address needs which are relevant to this project. As a result, there is potential for development cooperation efforts to rely on the expertise and experience of these organisations. Furthermore, they have all been in activity for several years, are doing well and already have a strong reputation in Belgium and on the international stage. Finally, at least two of them (Zetes, Belgium Campus) have expressed the desire to grow their activity.

14.1 Zetes

Zetes is a Belgian IT company founded in 1984. The company started with the identification of goods and later (2002) expanded its activity to the identification of people. All projects linked with the identification of people use biometric technology. Their activity covers the whole identification process, from the collection of personal identity information, to the production of ID documents and the storing and reproducing of identification data (Zetes, s.d.). Africa is currently in great demand of this type of technology. Zetes already worked with several African countries including Sierra Leone, Cabo Verde and the Democratic Republic of Congo and Burundi (Zetes, s.d.).

14.2 Belgium Campus

Belgium Campus is a not for profit company that aims to improve the ICT industry of Africa, by providing high quality Information and Communication Technology educational programs. The organisation was founded in 1999 by two Belgian entrepreneurs, Jan Rombouts and Enrico Jacobs (Belgium Campus, s.d.). Belgium Campus is located in Pretoria, South Africa and offers courses in Information Technology and in Computing. With over 500 students annually, it has grown into the main institution for diplomas and degrees in ICT and produces up to 10% of ICT graduates in South Africa every year. The organisation is committed to growing and plans to increase the student body to 800 by 2017 (Belgium Campus, s.d.). The programmes are mainly aimed for full-time students, however programmes are also designed for employees.

14.3 Close the Gap

Close the Gap is an international non-profit organisation that provides donated computers to education, medical and social projects in developing and emerging countries (Close the Gap, s.d.). It has administrative offices in Brussels (Belgium) and Amsterdam (Netherlands). The way the organisation works is by arranging the collection, clean-up and reconfiguration of decommissioned computers before shipping them to the destination country. Furthermore, it provides comprehensive software and hardware solutions to its recipients by building partnerships with organisations in industrialised, emerging and developing countries. Since 2003, the organisation has received over 250,000 computers and supported over 2,500 projects around the world.

14.4 Flemish Interuniversity Council for University Development Cooperation (VLIR-UO S)

Flemish Interuniversity Council for University Development Cooperation (VLIR-UO S) is an institution of public utility founded by the Flemish Interuniversity Council (VLIR). While the VLIR is the organisation responsible for the interaction between Flemish universities and the Belgian government, the VLIR-UOS can be defined as the organisation's secretariat for university development cooperation. It receives its budget from the Belgian Development Cooperation. The organisation supports research and higher education institutions in the South through partnerships with Flemish universities and higher education institutions and encourages interaction between higher education and governments, NGOs and businesses in Flanders and the South. The two main channels for its activity are the *scholarships* it provides to selected candidates from Africa, Asia and Latin America and the *funding of projects* between researchers from Flanders and from one of the partner countries. Moreover, it provides partner universities with computers as well as ICT maintenance and training for local staff to increase their capacity.

The equivalent to the VLIR-UO S in the French-speaking part of Belgium is called ARES, the academy of research and higher education (*Académie de Recherche et d'Enseignement Supérieur*). The organisation is also a partner to the Belgian Development Cooperation and operates in a very similar way as the VLIR-UO S.

PART 4: COUNTRY PROFILES

An analysis of the local context within the fourteen partner countries reveals that nine out of fourteen could benefit from support with the development of a national register. Five partner countries have expressed the desire to improve their provision of online services and four countries want to improve ICT literacy among their population. The table summarising the country profiles can be found in annex.

Another important challenge faced by six partner countries is one of capacity-building within their administration. Although technologies have in some cases already been introduced within the administration, public servants do not have the skills to use them. Furthermore, two countries want to pay more attention to change management to face any resistance to change within the administration. A need for better e-Integration has been expressed by five of the fourteen partner countries.

Four partner countries want to address the digital divide by setting up Community Multi-Media Centres. Three countries could benefit from legal and regulatory advice, two countries want to improve their eWaste management, two countries could benefit from help defining their e-Government strategy and finally, two other countries could benefit from advice on how to improve their Government Intranet.

PART 5: RECOMMENDATIONS

15. Partner countries

The Fedict can play an important role in helping the partner countries address their most pressing needs. It can provide advice and training on how to set up a national register and a government intranet, ensure e-Integration, improve the provision of online services or define an e-Government strategy. Cooperation efforts could also help partner countries with capacity-building within the administration and with change management. A close collaboration with private company Zetes should be considered for the setup of national registries.

Other cooperation efforts could focus on helping partner countries setting up Community Multi-media centres by providing the technological equipment. These Multi-media centres can then be used to provide basic ICT literacy trainings for the local population. A collaboration with Belgium Campus for the provision of such training sessions should be considered.

Finally, the Belgian Development Cooperation can help its partner countries with their eWaste management by working in collaboration with Close the Gap.

16. General recommendations

The literature provides development cooperation agents with important lessons and insights on how to improve their cooperation approach. A first general recommendation for this new D4D strategy would be to respect the five core principles defined in the Paris Declaration on Aid Effectiveness and to adopt the approach presented in section seven. Related to the idea of cooperation efforts driven by results and monitored through assessment mechanisms, a second recommendation would be to give a lot of attention to the collection of accurate data on the different projects that can then be used for quantitative analysis and impact assessment. A collaboration between higher education institutions from Belgium and from the partner country could be interesting in that regard. Making better use of data through this type of approach seems more appropriate than to encourage partner countries to make more data publically available, given the fact that Belgium has very little experience with Open Data.

The literature also discusses how cooperation efforts so far have failed to sustainably and effectively build capacity within the recipient country. This concern has also been expressed by the audience at the 2016 ID4Africa conference. Development agents tend to be more focused on ‘getting the job done’ rather and too little time is given for capacity-building efforts to show sustainable results. This is going to be an important challenge to the present project, because where Belgium can bring the most added value in terms of digital technologies and e-Government is in its expertise and experience. In terms of e-Government, the organisation with the most expertise is the Fedict. However development cooperation is not its main activity. As a result, it is only able to provide short term training sessions to a limited number of countries. The Belgian Development Agency (BTC or CTB), the main organisation responsible for the implementation of the Development Cooperation strategy, does not have the same experience and expertise to take on this job. A third recommendation would thus be to hire one or two people within the Fedict with the right experience and

know-how, to exclusively work on development cooperation. These two managers could focus their activity on helping partner countries develop their e-Government and would able to invest more time and efforts to guarantee the successful implementation of the projects. They would help build a strong reputation for the Belgian Development Cooperation. As mentioned in this document, trust plays an important role both within the context of e-Government and within the context of public-private partnerships. E-Government projects can be risky and costly to implement and governments are always careful in selecting candidates for such projects. By spending more time in the partner country helping it develop its e-Government and interacting at the highest political levels, the two managers can strengthen this relationship and build trust. This trust can then work in favour of Belgian companies like Zetes. If both the Belgian public and private sector do their job well, Belgium will be able to build itself a strong reputation on the international stage. If this recommendation is not taking into account, the Belgian Development Cooperation should nonetheless pay attention to the importance of leadership and image-building in this project. It is also necessary to clearly define the role of the BTC and the Fedict within this project.

A final recommendation would be to seek possible synergies between interventions in different partner countries. As can be seen in table 17, many partner countries face the same difficulties. To avoid inefficiencies, cooperation agents should consider designing solutions that can easily be replicated in several countries.

17. Discussion

Before concluding the present thesis, it is relevant to identify some of its limitations and to make some recommendations for further investigation. First of all, it is important to mention that the information on the fourteen partner countries comes primarily from Internet sources. This especially limits the accuracy of information on a country's technological environment. The extent to which the mentioned government policies and strategies have already been implemented or the trustworthiness of intentions towards the future are in most of the cases unclear. Further investigation is needed in that regard and development cooperation agents are invited to visit to the partner countries to make a first contact, get a better overview of the current state of things and obtain more accurate information.

Secondly, one might have noticed that some recommendations are relatively general, merely suggesting a certain direction by highlighting the most pressing needs of the partner country. The reason this is that, given the limited time given for doing the thesis, there was not enough time to identify exactly *how* organisations within the public and private sector should organise their efforts to be the most effective. In this case as well, going to the field to meet with representatives from the different countries and organisations would have been useful.

18. Conclusion

Digital technologies represent a great potential to improve governance, strengthen social inclusion and foster empowerment in a society. The purpose of the thesis is to identify an approach for Belgium to help its partner countries reach these potential benefits, given the expertise in Information and Communication Technologies

within its public and private sector and to make some reasoned recommendations for intervention. The literature on e-Government on the one hand, and the literature on development cooperation form the foundation of the presented approach to e-Government development cooperation. Over the years, the focus in development cooperation has slowly shifted towards technical assistance, the transfer of skills and know-how to build capacity. For interventions to be effective and sustainable, it is important to make sure that a real transfer of knowledge takes place. In terms of e-Government, Belgium is being recognized as a strong player. The Ministry of Development Cooperation wants to rely on the expertise present within the public and private sector and adopt a collaborative and inclusive approach by working jointly with its partners towards common D4D-priorities to achieve a significant and sustainable impact. This will require the Belgian Development Cooperation to have a good understanding of where the expertise is and who the potential partners are from the private sector. The present thesis has identified four potential partners. The Fedict in particular has a lot of experience and expertise to share on the topic of e-Government.

By looking at the local context within each one of the fourteen partner countries, this document has tried to identify where the most pressing needs are and what the possibilities are for e-Government Development Cooperation. One of the most recurring needs of the partner countries is to set up a national register and to connect it with the different identity systems. Nine out of the fourteen partner countries are still in the process of setting up such a register. This has also been identified by the World Bank as one of the first steps towards more accountable institutions. Two other recurring needs are needs for capacity-building and e-Integration within the administration. The recommendations presented in this document are based on an overview of the most pressing needs of the fourteen partner countries. Additionally, some general recommendations were made for the project in general.

Some important steps in the process of this new Digital for Development strategy have not been addressed in the present thesis. First of all, there is a need to take a closer look at the Belgian ICT sector to identify exactly where the expertise lies and who the potential partners are within the private sector for cooperation efforts. Secondly, development cooperation agents are encouraged to visit to the partner countries to make a first contact, get a better overview of the current state of things and obtain more accurate information. Finally, the role of each development cooperation agent within this project needs to be clearly defined.

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20. Annex

Adult literacy rate	Adult literacy rate (%)
HDI	Human Development Index (rank out of 188 states)
CPI	Corruption Perceptions Index (rank out of 168 states)
NR	National Register
OSI I	Provision of information to citizens
ICT Literacy	Population ICT literacy
Capacity-building	Capacity-building within the administration
Change management	Change management within the administration
CMMC	Set up Community Multi-Media Centres
L&R	Legal and regulatory advice
eWaste	eWaste management
e-Integration	e-Integration of government systems
e-Gov Strategy	e-Government strategy
Government intranet	Government intranet

TABLE 1: ABBREVIATIONS USED IN TABLE 2 (AUTHOR, 2016)

	Adult literacy rate	HDI	CPI	NR	OSI I	ICT literacy	Capacity-building
Benin	42.3%	166	83	X		X	
Burkina Faso	36.0%	183	76	X	X	X	
Burundi	85.6%	184	150				X
RDC	61.2%	176	147	X		X	X
Guinea	25.3%	182	139	X			
Mali	38.7%	179	95	X	X	X	X
Morocco	68.5%	126	88				
Mozambique	50.6%	180	112	X			X
Niger	28.7%	188	99	X	X		
Palestinian Territories	99.0% (youth)	110	/				
Rwanda	86.2% (youth)	163	44				X
Senegal	57.6%	170	61		X		
Tanzania	70.6%	151	117	X			X
Uganda	73.2%	163	139	X	X		

	Change management	CMMC	L&R	eWaste	e-Integration	e-Gov Strategy	Government intranet
Benin		X	X				
Burkina Faso		X					
Burundi		X	X				
RDC	X						
Guinea					X		X
Mali		X			X		
Morocco							
Mozambique	X						
Niger						X	X
Palestinian Territories			X		X		
Rwanda				X	X		
Senegal						X	
Tanzania				X			
Uganda					X		

TABLE 2: OVERVIEW OF COOPERATION OPPORTUNITIES (BY COUNTRY)